

THE ASTROPHYSICAL JOURNAL

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

Agents

THE CAMBRIDGE UNIVERSITY PRESS
LONDON AND EDINBURGH

THE MARUZEN-KABUSHIKI-KAISHA
TOKYO, OSAKA, KYOTO

KARL W. HIERSEMANN
LEIPZIG

THE BAKER & TAYLOR COMPANY
NEW YORK

THE ASTROPHYSICAL JOURNAL

An International Review of Spectroscopy and
Astronomical Physics

EDITORS

GEORGE E. HALE
*Mount Wilson Solar Observatory of the
Carnegie Institution of Washington*

EDWIN B. FROST
*Yerkes Observatory of the
University of Chicago*

HENRY G. GALE
*Ryerson Physical Laboratory of the
University of Chicago*

COLLABORATORS

JOSEPH S. AMES, *Johns Hopkins University*; ARISTARCH BELOFOLSKY, *Observatoire de Poulkova*;
WILLIAM W. CAMPBELL, *Lick Observatory*; HENRY CREW, *Northwestern University*;
CHARLES FABRY, *Université de Marseille*; CHARLES S. HASTINGS, *Yale University*;
HEINRICH KAYSER, *Universität Bonn*; ALBERT A. MICHELSON, *University of
Chicago*; HUGH F. NEWALL, *Cambridge University*; ERNEST F. NICHOLS,
Dartmouth College; ALFRED PEROT, *Paris*; EDWARD C. PICKERING,
Harvard College Observatory; ANNIBALE RICCÒ, *Osservatorio
di Catania*; CARL RUNGE, *Universität Göttingen*; ARTHUR
SCHUSTER, *The University, Manchester*; KARL
SCHWARZSCHILD, *Astrophysikalisches Obser-
vatorium, Potsdam*; FRANK SCHLES-
INGER, *Allegheny Observatory*

VOLUME XLI

JANUARY-JUNE, 1915



THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

Published
January, March, April, May, June, 1915

Composed and Printed By
The University of Chicago Press
Chicago, Illinois, U.S.A.

CONTENTS

NUMBER I

	PAGE
JULIUS SCHEINER. Edwin B. Frost	I
COMPARISON BETWEEN THE DISTRIBUTION OF ENERGY IN THE SPECTRUM OF THE INTEGRATED LIGHT OF THE GLOBULAR CLUSTER MESSIER 3 AND OF NEIGHBORING STARS. E. Hertzsprung	10
OBSERVATIONS OF THE <i>Grundspectra</i> OF ALKALI AND ALKALINE EARTH METALS. Edgar H. Nelthorpe	16
ANOMALOUS DISPERSION IN THE SUN IN THE LIGHT OF OBSERVATIONS. Charles E. St. John	28
MINOR CONTRIBUTIONS AND NOTES: On the Spectrum of Yttrium, Emil Paulson, 72; Note on the Blue Spectrum of Argon, Emil Paulson, 75; On a Device for Avoiding Systematic Error Depending on Magnitude in the Measurement of Stellar Photographs, J. C. Kapteyn, 77.	

NUMBER II

NILS CHRISTOFER DUNÉR. Anders Ångström	81
THE VARIATION WITH TEMPERATURE OF THE ELECTRIC FURNACE SPECTRA OF VANADIUM AND CHROMIUM. Arthur S. King	86
THE FLASH SPECTRUM WITHOUT AN ECLIPSE. REGION λ 4800- λ 6600. Walter S. Adams and Cora G. Burwell	116
ON THE SIMPLEST FORM OF THE STELLAR INTERFEROMETER FOR DETERMINING THE ANGULAR DIAMETERS OF STARS BY MEANS OF ELLIPTICALLY POLARIZED LIGHT. S. Pokrowsky	147
THE DIFFERENT CHARACTER OF SPECTRUM LINES BELONGING TO THE SAME SERIES. T. Royds	154
A CRITERION FOR SPECTROSCOPIC BINARIES WITH AN APPLICATION TO ρ LEONIS. Frank Schlesinger	162

MINOR CONTRIBUTIONS AND NOTES: The Solar Prominence of October 19-21, 1914, Oliver J. Lee, 168; On the Non-Existence of the Line of Wave-Length 6708 Å in the Arc Spectrum of Calcium, H. G. Woodward, 169.

REVIEW: The Reform of the Calendar, Alexander Philip (E. B. F.), 172.

NUMBER III

AN OPTICAL PERIODOGRAPH. A. E. Douglass	173
LIST OF STARS WITH PROPER MOTION EXCEEDING 0".50 ANNUALLY. Adriaan Van Maanen	187
PHOTOGRAPHIC AND PHOTO-VISUAL MAGNITUDES OF STARS NEAR THE NORTH POLE. Frederick H. Seares	206
PARALLAXES OF FOUR VISUAL BINARIES. Frederick Slocum	237
MINOR CONTRIBUTIONS AND NOTES: The Radial Velocities of Stars of Class Md, Paul W. Merrill, 247.	
REVIEWS: Color-Equation of Various Star Catalogues, E. C. Pickering; Beitrag zur Frage nach der Abhängigkeit der Helligkeitsmessungen der Sterne von der Farbe, G. Müller und P. Kempf (J. A. Parkhurst), 250; Astronomy, A Popular Handbook, Harold Jacoby (Jessie M. Short), 252.	

NUMBER IV

A GREAT NEBULOUS REGION NEAR OMICRON PERSEI. E. E. Barnard	253
A COMPARISON OF THE HARVARD AND MOUNT WILSON SCALES OF PHOTOGRAPHIC MAGNITUDE. Frederick H. Seares	259
MISCELLANEOUS NOTES ON VARIABLE STARS. Harlow Shapley	291
SOME ORBITAL CHARACTERISTICS OF THE CEPHEID-GEMINID VARIABLES AND A SUGGESTED EXPLANATION OF THE CAUSE OF THEIR LIGHT-VARIATIONS. C. D. Perrine	307
AN APPARENT DEPENDENCE OF THE RADIAL VELOCITIES AND PROPER MOTIONS UPON MAGNITUDES AND SPECTRAL SUBDIVISIONS OF THE STARS WITHIN CLASS B. C. D. Perrine	315
MINOR CONTRIBUTIONS AND NOTES: Some Recent Discoveries in Spectrum Series, F. A. Saunders, 323.	

CONTENTS

vii

PAGE

REVIEWS: Polhöhen-Schwankungen, E. Przybyllok (Harlow Shapley), 328; Données numériques de spectroscopie (H. G. G.), 329; The Earth, Its Life and Death, A. Berget (E. B.), 330; Astronomy, G. F. Chambers (P. F.), 331.

NUMBER V

ANOMALOUS DISPERSION IN THE SUN. Sebastian Albrecht . . .	333
THE STARK EFFECT AND ATOMIC STRUCTURE. Gordon S. Fulcher .	359
THE TUBE-ARC SPECTRUM OF IRON AND A COMPARISON WITH DIS- SYMMETRIES IN SPARK SPECTRA. Arthur S. King . . .	373
AN APPARENT RELATION BETWEEN THE RADIAL VELOCITIES OF THE STARS AND THEIR MAGNITUDES. C. D. Perrine . . .	395
MINOR CONTRIBUTIONS AND NOTES: A Sensitive Photo-electric Cell, E. O. Hulburt, 400; The Spectral Distribution of the Stars of Large Radial Velocity, C. D. Perrine, 401.	
INDEX	405